Synopsis

Name of Scholar

(In English) Garima Lakhotia
(In Hindi) गरिमा लखोटिया

Title of the Research Work

(In English) Nutritional Analysis of Selected Commercial and Home-made Fast Foods and their Preferences in Youth

(In Hindi) वाणिज्यिक एवं घर में बनें चयनित फास्ट फूड का पोषण विश्लेषण और युवाओं में फास्ट फूड की प्राथमिकताएँ

Location

a. Institution/Department where the work is to be done

The research work will be done in Food Science and Nutrition Department, Maharshi Dayanand Saraswati University, Ajmer (Rajasthan)

b. Geographical area of Investigation, if any.

The research work will be carried out in Ajmer City.

Introduction

In today's scenario frequency of eating fast food is going higher. Fast food eating habits are increasing not only in children and adolescents but also in adults. Consumption of fast food has increased and the risk and incidence of diseases also increased. Fast food consumption is the most common reason behind obesity, heart diseases, diabetes and other health problems. Fast foods are high in cholesterol, salt, sodium, fat and low in nutrients. Because of low nutrients a person's daily requirement of nutrients does not get fulfilled therefore so many problems has arrived. Poor nutritional diets retard the growth of a child.

Studies have also shown that as early as the age of 30, arteries could begin clogging and lay the ground work for future heart attacks. Whatever children eat in puberty it affects their health in later age. Osteoporosis, prostate cancer, breast cancer and hypertension are other diseases that appear to have their earliest roots in childhood when lifelong eating habits are being formed.

Fast Food

Fast foods are easily prepared processed food which serves in snack bars and restaurants as a quick meal or to be taken away. Fast foods are easily accessible and cheap alternative to home cooked food. Junk food term refers to fast foods which are easy to make and quick to consume. They are zero in nutritional value and often high in fat, salt, sugar, and/or calories. Common junk foods include salted snack foods, fried fast food, and carbonated drinks. Junk Food has become a major problem and many countries are taking action – banning junk food advertising in children's programs, removing it from schools and even imposing a fat tax. Many junk foods also have trans fats. Trans fats behave like saturated fats when they get in the body. They clog up the human arteries and cause plaque to build up contributing to heart disease and stroke symptoms.

Junk Food is defined as "any food, which is low in essential nutrients and high in everything else in particular calories and sodium. Junk foods contain little or no proteins, vitamins or minerals but are rich in salt, sugar, fats and are high in energy (calories). Highly salted like chips, high in refined carbohydrates (empty calories) like candy, soft drinks and high in saturated fats like cake and chocolates."

Fast food has become a staple of today's culture. One reason for fast food's popularity is that it satisfies our society's need for quick, easy and convenient products. Despite the multitude of studies that have proven the destructive nature of fast food, most people tend to turn a deaf ear and ignore the problem. But opting for ignorance doesn't change the fact that fast food is very bad for your health. Eaten in high quantities, it even becomes dangerous.

Not everyone that eats fast food is affected by these, but everyone is at risk.

- Risk of Obesity
- Risk of Diabetes
- Risk of Stroke
- Risk of Coronary Artery Disease
- Unhealthy levels of Sodium
- Lack of Healthy Nutrients

Young Adult

A young adult is generally a person in the age range of 18 to 35. The young adult is usually preoccupied with self-growth in the context of society and relationships with others.
Young adulthood is filled with avid quests for intimate relationships and other major commitments involving career and life goals there is also a parallel pursuit for the formulation of a set of moral values.

Laboratory based analysis

In laboratory based analysis physical sample of food or food product is require. This analysis is performed by using various instruments and techniques and yield data that is specific to the product. Laboratory based analysis can be used for any type of food and food products.

Importance

Now days fast foods are included in the people's every day's diet in a big amount. It is necessary to give knowledge to people that fast foods are not good for health. Fast food did not fulfill the daily nutritional requirement. Through nutritional analysis of fast foods we can apart the knowledge of people in term of amount of nutrients which are present in fast food products. It will help the people to change their eating habits towards healthy diet. Nutritional analysis will help the people to think what they have to eat for good health. Therefore the present study was proposed.

Objectives

- To know the preferences of fast food products of young adults (18-35 year).
- To study different components (Proximate, some vitamins and minerals, monosodium glutamate, potassium bromate) of fast food products sold by fast food outlets and prepared at home.
- To compare the value of different components of fast foods sold by fast food outlets and homemade fast foods.

Review of literature

A study conducted in 2013 on Growth of Fast Food Industry with Reference to Shift in Consumer's Buying Habits in Nagpur city. They select the 30 samples with non- probability convenience sampling method. For the collection of data they used Questionnaire method. Results of this study had shown that the Fast food industries are one of the sectors that have grown even during the economic slowdown. The high rate of growth of the fast food industries can be seen at the recent past. Today not only the young generation but also people from all age group demand fast food in their everyday's eating habits. Fast food industries have acquired a place in people's life is such that ordering the fast food item or visiting the outlet of fast food item portrays a symbol of higher standard of living in the society for the one and all, availing their services. Fast food restaurants provide number of services including festive offers, combo offers, free delivery, complementary items on every purchase and many more to attracts more and more buyers towards these services. Fast food is a multibillion dollar industry which is affecting people's nutritious and healthy diet. Junk food along with taste brings lots of health issues for on all consuming these food items.(Kashyap *et al*., 2013)

According to a study Fast food industry sector is one of the world's fastest growing sectors in food industry. However, over a period of time, with a growth in the number of nuclear families, economic growth and increasing per capita income as well as globalization, fast food culture gained prominence in India. The study reveals that absence of healthy menu, no new varieties of fast food were major problems perceived by the consumers in fast food restaurants.(Prbhavathi *et al.*,2014)

In a study researchers had written that Fast food has become an important part of dietary menu for most children and adolescents. Children are easily convinced by marketing strategies and peer pressure. Fast food is not good for health. They are high in sugar, saturated fats, salt and calories and low in nutrients and fiber. Consumption of diet high in sugar, saturated fat, salt and calorie content in childhood can lead to early development of obesity and cardiovascular diseases. Nutritional labeling of food might restrict the quantity of food ordered and choice of low fat menu among children of educated parents. Promotion of healthy eating habits and education about junk foods needs to be strengthened. (Kaushik *et al*., 2011)

A study revealed that there is a shift from opting to eat at home to opting to eat out. People also have awareness about harmful effects of processed foods was high but the reason for consumption was attributed primarily to ease of purchase. The implications of the research are an attempt to ensure that key steps are taken by public officials: such as a tax on unhealthy foods, subsidies for healthy food, and promotion of healthy norms. Also FSSAI guidelines need to strengthen to ensure that customer awareness increase and food companies opt for a more transparent communication platform.(Madhvapaty and Dasgupta, 2015)

According to a review article, healthy eating habits are one of the essential requirements for healthy long life. Unfortunately, whole world has been adapted to a system of consumption of foods which has several adverse effects on health. Lifestyle has changed. No one had time to think that what we are eating is right! Eating habits of people are greatly affected by Globalization and urbanization and forced many people to consume fancy and high calorie fast foods, popularly known as Junk foods. Research into the possible health hazards on consumption of such high calorie foods has given an insight to avoid them, but unfortunately measures taken are not as effective as they need to be. Diseases like coronary artery disease and diabetes mellitus have seen a profound rise in developing countries. This global problem of consuming junk food on a large scale and its impact on health needs emphasis and health education which can greatly contribute to its limited consumption

and switching over to healthy eating habits for the better living. Knowledge highlighting about the eating habits, nutritional aspects, and quality of unhealthy foods, their health impact and preventive measures should be given to create awareness and render health education for a change towards good eating practices. (Ashakiran & Deepthi , 2012)

A researcher studied in his research that due to rapid urbanization, income growth and globalization have lead to dramatic shifts in Indian diets during the past 40 years. The diversification from traditional food products to western style is responsible for changes in the whole food system. These kinds of dietary changes are also affecting the small farmers by commercializing agriculture and shifting towards contract farming. The changes in purchasing behavior and food preferences are encouraging people to buy processed foods in supermarkets and are replacing traditional supply chains. Specific changes –transition from millet to rice; from cereal to meat and from seasonal vegetables to high-value vegetables also seen in this study. Drastic changes in consumer demand and dietary preferences have changed the way food is produced in this country. These changes are leading to obesity and severe health problems as well as making the many small farmers leave agriculture. (Rajitha, 2012)

Consumption of fast foods has become almost a global phenomenon, as more and more people are attracted by it day by day. Study showed interesting results. On one hand sex and economic status were found chief variable in fast food consumption as girls are leading in former and adolescent students reading in private schools are up in the latter. On the other hand, flavor, variety, brand, fast service and availability were found main driving force in fast food intake. Also exposure to advertisements, media influence and urbanization were found chief factors in fast food intake. (Vaida, 2013).

A study has been done on "Consumer Behavior for Food Products in India". In this study researcher explored the consumer behavior for food products in India from different perspectives. Cleanliness of the product, free from pesticides, freshness, good for health, and clean place of sale are some of the most important attributes, which are rated very highly by people in India while buying food products. Value for money, overall quality, taste, availability of variety of products at same place, seasonality for the product, flavor, good display of products, nearby availability and good ambience are some other important parameters. People accepted the fact that their food habits get affected with the shifting to a new region but many basic buying and consumption behavior do not change. Some of the changes in buying and consumption behavior of relocated people, which were observed after their settlement to a new region, were not significantly different from the level of changes in behavior of non-moving people. (Gupta ,2009)

In a study researcher has examines the change in the nature of food demand in India in the last twenty years. It identifies two distinct stages of diet transition associated with the period of economic growth. During the first stage, income-induced diet diversification, consumers move away from inferior goods to superior foods and substitute some traditional staples, especially rice. In the second stage, diet globalization, the influences of globalization are much more marked with increased consumption of proteins, sugars and fats. Diet diversification has marked the process of transformation in food production systems. (Pingali and Khwaja ,2004)

According to a study Rapid economic and income growth, urbanization, and globalization are leading to a dramatic shift of Asian diets towards a Western diet. The rapid spread of global supermarket chains and fast food restaurants are reinforcing the above trends. According to the results following six key facts characterize the changes in food demand in Asia: - i) reduced per capita consumption of rice; ii) increased consumption per capita of wheat and wheat based products; iii) increased diversity in the food groups consumed; iv) rise in high protein and energy dense diets; v) increased consumption of temperate zone products; and vi) the rising

popularity of convenience food and beverages. As the demand profile changes with economic growth and globalization, so the supply systems must adapt to accommodate this change. (Pingali, 2004)

According to a study Food habits in general are influenced by socio-cultural background, religious beliefs and customs, and individual taste. But among teenagers and youth, there may be some added reasons for adopting fast food culture. In this study researcher studied the food habits of teenagers and youth in relation to fast food consumption and the socio-cultural, demographic and other characteristics of fast food consumer. The study concludes that adoption of fast food culture among restaurant going teenagers and youth, in a city like Allahabad, is limited to occasional outings. This holds irrespective of gender, socio-economic status and equally for vegetarians and non-vegetarians. (Kumar *et al*., 2006)

A researcher written in his study eating out is a common phenomenon in India. Customers tend to go to different types of restaurants. They tend to show a variety seeking behavior in terms of outlets and variety of food. This has created a large potential. The industries are growing with a rapid rate. Simultaneously, it has also created a canvass that has many failures. Several outlets have been closed, a large number are struggling, still a large number are just about surviving and a lot many of them have not been able to find their feet. There are a lot who are successful, but, more importantly, there is almost a complete absence of national chains, except of two cafes, three – four international chains and a few regional chains. This paper is an attempt to suggest a framework when starting or scaling up the business. (Sinha, 2001)

In a paper, researchers have worked on recent evidence on food intake and nutrition in India. According to the researcher calorie requirements have declined due to lower levels of physical activity or improvements in the health environment. These deficits are reflected in some of the worst anthropometric indicators in the world. The recent trends are still remained confused and there is an urgent need for better nutrition monitoring.(Deaton, Drèze,2009)

A study was conducted to assess the fast food habits in adolescents. Fast food habits are now days very common among youngsters & greater attraction towards these rather than towards traditional foods are found. Result of this study revealed that 80% adolescents preferred fast foods. Thus it can be showed liking for fast foods is very common among adolescents. (Lakhotia, 2011)

Children and adolescents do not have healthy food habits. Poor food habits can contribute to an undesirable body weight. It is estimated that 17% of children and adolescents aged 2 to 19 years are overweight. Child hood overweight can predict adulthood overweight. Because food habits are learned in childhood and tend to persist into adulthood, the timing for the development of healthy food habits is important. This study done to examine the food habits of sixth graders by determining the frequency of daily intake of milk, soda pop, vegetables, fruit, sweets, chips or other salty snack foods, and fast foods. The results shown that boys and girls had similar food habits for milk, soda pop, vegetables, fruit, sweets, and fast food consumption. There was a statistical significant difference for the number of times that boys and girls ate chips and other salty snacks. Boys ate chips or other salty snack foods more often than the girls. (Brunner, 2006)

A study was done in Minnesota, United States to examine demographic, behavioral and dietary correlates of frequency of fast food restaurant use in adolescent students. Results revealed that Frequency of fast food restaurant use (FFFRU) was positively associated with intake of total energy, percent energy from fat, daily servings of soft drinks, cheeseburgers, French fries and pizza, and was reversely associated with daily servings of fruit, vegetables and milk. FFFRU was positively associated with student employment, home availability of unhealthy foods, television viewing and perceived barriers to healthy eating, and was negatively associated with student's own and perceived maternal and peer concerns about healthy eating. FFFRU is associated with higher energy and fat intake among adolescents. (French *et al.,* 2001)

Fast food consumption has been associated with bad effect on health, fast food culture is an emerging trend among school going children. The ready availability, taste, low cost, marketing strategies and peer pressure make them popular with children and adolescents. According to a study out of 100 school going students 40%of were eat pizza once per week, 39% of respondent were eat burger 2-4 time per week, 29% of respondent were eat chocolate 2-4 time per week, 35% of respondent were eat ice cream daily, 33% of respondent were eat cookies/ cake 5-6 time per week, 31% of respondent were eat chowmine 2-4 time per week, 31% of respondent were eat pasta once per week, 42% of respondent were eat maggi 5-6 time per week. 98% of respondents were like to eat fast food and 2% of respondents were not like to eat fast food so the school going children give more preferences for fast food. (Singh and Mishra , 2012)

A study done in 2008 described some finding from The National Food and Nutrient Analysis Program (NFNAP) and its impact on the food composition databases produced by United States Department of Agriculture (USDA). Researchers select foods (454 Key Foods) and ranked them. Foods were ranked using a scoring system, divided into quartiles, and reviewed to determine the impact of changes in their composition compared to historic values. Foods were purchased from different locations, such as retail outlets and fast food restaurants in different geographic areas as determined by the sampling plan and then samples sent for analysis to commercial laboratories and cooperators, along with quality control materials. Comparisons were made to assess differences between new NFNAP which is generated from original analytical data and historical means. New generated results for nationally representative food samples show marked changes compared to database values for selected nutrients. (Haytowitz *et al*., 2008)

In a study researchers evaluate the nutritional quality and marketing of fast food. They select fast food menu of 12 restaurants for evaluation. Researchers divide the menu in different groups and then they evaluate the nutritional quality of food products and marketing practices of restaurants.(Harris *et al*., 2013)

In a book, there is a chapter on "Validating Diet Composition by Chemical Analysis". In this chapter writer wrote that there are really three reasons for assessing the diets. The first is to develop diets with the desired nutrient concentrations; the second is to verify, prior to feeding, that the prepared diets have the desired nutrient levels, and the third is to document the constancy of dietary composition over the course of the study. Procedures for chemical analysis of diet samples are also written in this chapter.(Philips and Stewart, 1999)

In America consumption of quick service pizza has increased. People spend more on food away from home. In USDA National Food and Nutrient Analysis Program (NFNAP) pizza is consistently a primary Key Food because it is a contributor of more than 14 nutrients of public health significance to the U.S. diet. The USDA Nutrient Data Laboratory collected samples of the two leading fast food pizza chains to monitor and update changes in this popular food nationally. Cheese pizza (regular, thick, and thin crust) and pepperoni (regular and thick crust) pizzas were collected in 12 nationwide locations in 2010. Sample of pizzas were prepared for analysis of proximates, vitamins, minerals and fatty acids using NFNAP protocols. Nutrient data were statistically evaluated and according to the results, both brands of cheese, thin crust pizzas showed a significant increase in sodium. Across all pizza types, brand A pizzas showed a significant increase in iron and potassium. Total sugars, fiber, cholesterol, and fat values increased or decreased significantly by brand and pizza type. (Nickle and Pehrsson, 2013)

An analysis had done on junk foods. The results of the study shown that junk food contains high levels of sugars, salt and trans fats. And high level of these contents associated with chronic heart diseases and hypertension. In study researchers also found that salt content was not given by companies on the label. To reduce salt in diets and junk food companies should be asked to label salt quantity of their package. Labeling of

trans fats, saturated fats, sugars and salt along with already mandatory labeling nutritional information should be mandatory, at least for serving size for all processed foods including takeaway foods. (Johnson *et al*., 2012)

A research has been carried out by Consumers International Asia Pacific Office and CI member organizations and partners on food advertising directed at children in six countries in the Asia-Pacific region (India, Indonesia, Malaysia, Pakistan, Philippines and South Korea). The result of the study revealed that through television, advertisers can reach to all consumers. Children are exposed to advertisements in high amount. The majority of children believe that television advertisements to be informative and most children respond to them favorably. In India, 40-50 per cent of advertisements during children's program were for food. For Pakistan, the Philippines and Malaysia the percentage of food advertisements lied between 50 and 75 per cent. Children influenced by the advertisements. They did not have any nutritional knowledge on fast foods. The majority of parents from all six countries are in favor of a reduction of the number of advertisements during children's broadcasting.(Cruz *et al*., 2004)

According to a study overweight and obesity rates are rising faster in South East Asia than anywhere else in the world. This study shows the all over marketing of unhealthy food to children by the world's leading food and soft drink manufacturers. The food preferences of pre-teen and teenage consumers influenced from Internet promotions, to the direct appeal of celebrity and cartoon character endorsements; global brands. In India this report shows the need for a global framework for restricting the marketing of unhealthy food and drink to children and ensuring the promotion of healthy food products. (Robinson *et al*., 2008)

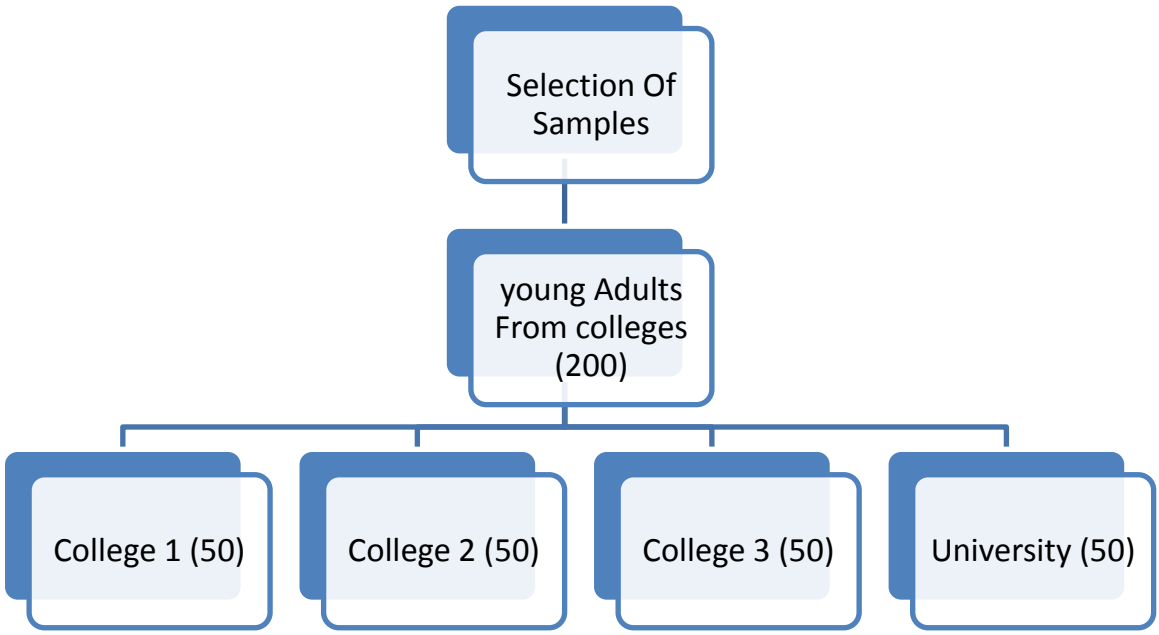
A study had done in Rajkot on "Nutritional and Hygienic Assessment of Foods Sold by Small Venders in Rajkot City". This study was carried out considering nutritional importance and microbiological assessment and hygienic assessment of the foods sold by small vendors and homemade foods. Chemical methods were used for assessment of nutritional quality. Analysis of carbohydrate, protein, fat, fiber, moisture, thiamine, Riboflavin, Niacin, ascorbic acid, Iron, calcium, sodium, potassium was done. Microbiological assessment was done by developing colonies on nutrient agar and MacConkey's agar and hygienic assessment was done by only observation methods. All vended food was compared with homemade foods. Results revealed that the bulk of food borne illness is associated with microbiological contamination of foods. Same time home made food is rich in nutrients and microorganisms are very less. With the help of this study people will know about difference between homemade food and vendor's food. Unhygienic foods items are rich in cholesterol is also identified by this study. People are provided with scientific knowledge about food they eat; it will be of great help to them and scientific knowledge about vended foods, and making choice of food items. (Solanki, 2011)

Research Gaps

After seeing the literatures, it is known that consumption of fast food products is increasing day by day all over the world. In India also it is increasing at very high rate. People prefer fast food products more than the household products. Consumption of fast food products is also increasing in Ajmer city. Many fast food outlets are opening in Ajmer. People attracted by these outlets .They prefer these outlets more and more. To enhance the knowledge of people, on fast food products, analysis of these, is necessary. This type of research has not been done before in Ajmer at major level. In literature, researchers have used questionnaire to know preferences of fast food products. Similarly, Questionnaire will be used in this proposed research also. To get the questionnaire filled, direct approach method is proposed to use. In this proposed study laboratory based analysis will be done on both types (homemade and prepared in fast food outlets) of samples.

Research Methodology

1. **Sample size :** 200 young adult (18-35 years)
2. **Geographical Area:** The study will be conducted in urban area of Ajmer.
3. **Sample selection**
    a. Selection of Colleges: 4 Colleges will be selected through random sampling method.
    b. Selection of Samples: Subjects in the age group of 18-35 years shall be selected from selected colleges.



4. **Preparation of questionnaire**

To know the most preferred fast food products and their buying places a questionnaire will be form. The Questionnaire will be filled by young adults. List of fast foods from which fast foods will be selected by Youth is mentioned below:-
Pizza
Burger
Pasta
French fries
Manchurian
Chowmein
Wada Pav
Samosa
Kachori
Pav Bhaji

5. Collection of information

a. General Information: This will involve collection of information about the subjects 'Name, Age, Gender, Educational Status etc'.

b. Specific Information: This will involve the collection of information about the fast food preferences and the popular outlets from where they buy fast foods.

6. Analysis of Popular Fast Foods

From the preferred fast foods top three will be selected for analysis.

7. Production of Fast Foods at Household Level

From the preferred fast foods top three will be prepared at household level (with standard recipes) for analysis.

8. Laboratory analysis of both fast food products

Most preferred fast food products of both types (prepared at market and homemade) will be analyzed for the following constituents:-

Constituent	Remarks	
Moisture	The moisture content will be determined by the method of AOAC method	
Protein	Protein will be analyzed by the Microkjeldahl method (AOAC method)	
Fat	Fat will be analyzed by the method of AOAC	
Fiber	Fiber will be analyzed by the method of AOAC method	
Carbohydrate	Carbohydrate content will be calculated by difference of other proximate principles	
Sodium	Sodium will be analyzed by AOAC method.	
Trans fat	Trans fat will be analyzed by AOAC method.	
Monosodium Glutamate	Monosodium Glutamate will be analyzed by AOAC method	
Potassium Bromate	AOAC method will be used for potassium bromated.	
Vitamins	Vitamin A (β carotene)	β carotene will be analyzed by AOAC method
	Ascorbic acid	Ascorbic acid will be estimated by AOAC method
Minerals	Calcium	AOAC method will be used to analyze calcium
	Iron	Iron will be analyzed by AOAC method

(AOAC:-Association of Official Analytical Chemist, Official method of analysis, USA)

9. Comparison

After the analysis of different components of both type (commercial and homemade) of fast food products, observations will be derived and then comparison will be done through statistical methods.

10. Results

At the end result will be drawn in the form of graphs, charts, tables etc.

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Signature of the Candidate with date

Outline Approved

Name and Signature of supervisor with date & seal.

Prof. Gulraj Kalsi Kohli
Head, Food science and Nutrition Department
Mahrshi Dayanand Saraswati University, Ajmer.